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L. O. HOWARD, Entomologist and Chief of Bureau.

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# THE CLOVER MITE.

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BY

F. M. WEBSTER,

*In Charge of Cereal and Forage Insect Investigations.*

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# United States Department of Agriculture,

## BUREAU OF ENTOMOLOGY.

L. O. HOWARD, Entomologist and Chief of Bureau.

### THE CLOVER MITE.

(*Bryobia pratensis* Garman.)

By F. M. WEBSTER,

*In Charge of Cercal and Forage Insect Investigations.*

#### INTRODUCTION.

The minute organism known as the clover mite (fig. 1) is not a true insect, but belongs, with the spiders, to a very extensive group the adults of which possess eight legs, whereas true insects have only six legs.

There are a great many species of these mites and they differ widely among themselves in habits. Some make galls on the leaves of trees and shrubs; some, like the one which commonly attacks the currant, are known as blister mites, as they cause blisters on leaves; others are parasitic on man, as the itch mite; while still others, like the *Trombidium*, are parasitic on insects. Another, *Pediculoides ventricosus* Newp., is parasitic on insects but also attacks man. The one here treated lives on the surface of leaves of trees and plants, but does not cause galls or blisters. It is a near relative of the notorious red spider.

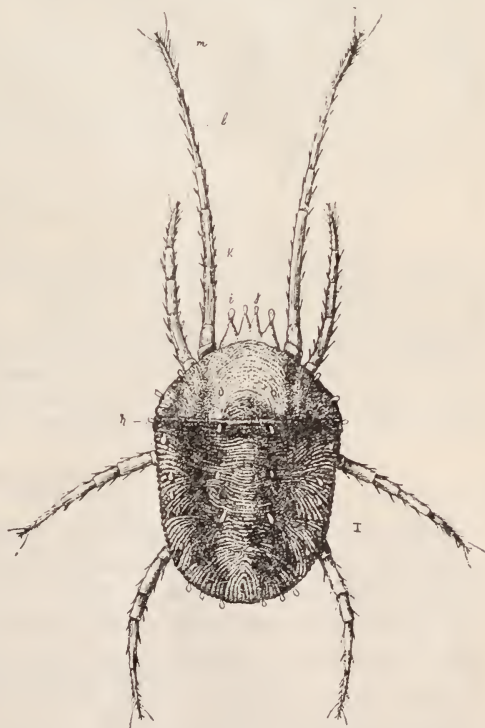
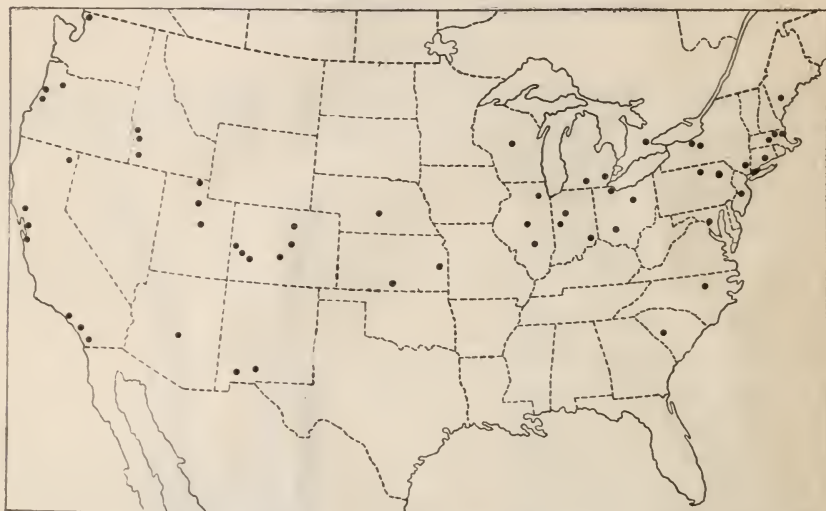


FIG. 1.—The clover mite (*Bryobia pratensis*).  
Enlarged; natural size shown by line at right.  
(From *Insect Life*.)

The clover mite, also known as the brown mite, is of a twofold interest. It attacks the leaves of clover, grasses, and fruit and other

trees, feeding upon and often destroying them; besides, during winter and spring it frequently swarms in dwellings, often crawling about in myriads over windows, furniture, pictures, curtains, etc.

The species was first described in 1885,<sup>1</sup> but it was observed in great abundance about Washington, D. C., by Mr. Theodore Pergande, of the Bureau of Entomology, as early as 1878. While described as a clover-infesting species, having been found infesting clover leaves by both Mr. Pergande and Prof. H. Garman, yet taken as a whole throughout its known area of distribution it is probably of more importance to the fruit grower than it is to the farmer. While east of the semiarid region it is found largely on clover and bluegrass, it is at present largely an orchard pest west of about longitude 100°.



●=BRYOBIA PRATENSIS

FIG. 2.—Map showing the distribution of the clover mite (*Bryobia pratensis*) in the United States in 1911. (Original.)

#### DISTRIBUTION.

With the possible exception of Georgia the pest seems to occur generally over the whole country, except perhaps in the Gulf States and the Dakotas, though just why it should not be found even there can not now be explained. (See map, fig. 2.) Mr. Marlatt<sup>2</sup> states that it has been reported from Tennessee, and in the Sierra Nevada Mountains in California and Rocky Mountains in Montana at elevations of from 7,000 to 8,000 feet, but exact localities are not given.

The mite was described from the leaves of red clover (*Trifolium pratense*) from which it derives its last or specific name. Accom-

<sup>1</sup> Fourteenth Rept. St. Ent. Ill., pp. 73-74, 1885.

<sup>2</sup> Cir. 19, Div. Ent., U. S. Dept. Agr., 1897.



ppanying the original description<sup>1</sup> is the following note by Dr. S. A. Forbes, State entomologist of Illinois:

At Normal, early in May, the general occurrence of a large and conspicuous brownish red mite was noticed upon clover and bluegrass, the former of these plants, especially, sometimes suffering severely from the pest. The leaves of the clover turned yellow and their growth was arrested where the mite was abundant. The effect upon the bluegrass was similar.

As a matter of fact, the bureau records contain reports of the occurrence of the species over the territory indicated by the map (fig. 2). These records illustrate its great variety of food plants as well as the effect of climatic and other natural conditions upon its habits; they are, however, far too voluminous to include in a publication of the nature of this circular.

#### DESCRIPTIONS.

These mites are sufficiently shown in figure 1 to obviate the necessity for a lengthy description. When young they are of a decidedly red color, but become brown when fully developed, even then being smaller than the head of a pin. They are very familiar objects moving about over clover leaves that have a more or less whitish appearance. The discoloration of the leaves is in part due to the feeding of the mites, and also to the tiny white web that they leave behind them as they move about. The eggs are minute, round, red, and shining.

#### FOOD PLANTS.

From the foregoing it will be observed that this mite is a general feeder and may be expected to attack clovers, alfalfa, bluegrass, and probably other grasses, among them timothy. It may affect oats and probably other grains including buckwheat. Mr. George P. Weldon calls attention to the fact that it had not been observed attacking apricot or quince and appeared less on peach than on most other fruits in Colorado.<sup>2</sup>

Judging from what we know of an allied species, *Tetranychus bimaculatus* Harvey, the pest is likely to become more abundant and injurious in the drier sections of the country than where the atmosphere is more humid. It does not necessarily follow that the mite will attack the foliage of the tree on which it has deposited eggs.

#### SEASONAL HISTORY.

Throughout the eastern portion of the country the life cycle and seasonal history of this species probably do not materially differ from those of other mites. With the coming of cold weather in late

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<sup>1</sup> Loc. cit.

<sup>2</sup> Bul. 152, Colo. Agr. Coll. Exp. Sta., p. 6, 1909.

autumn or early winter the mites apparently cease to deposit eggs, and thus operations are simply suspended until the coming of warm weather in spring, when the eggs promptly hatch young mites. This is clearly shown by the observations of Mr. Pergande.

As will be observed, the presence of mites in dwellings during fall and spring is of common occurrence. Do they deposit eggs and do these eggs hatch there? It may be stated that both eggs and mites were received from Williamsport, Pa., December 11, 1896, and that the eggs hatched en route. Also, as observed by the writer, the mites entering a dwelling in Lafayette, Ind., during December, 1889, when the weather was very mild, were at first full grown, but young appeared later in the month. Whether mites seek out dwellings in which to continue reproduction but die out for lack of food, or whether they enter them for the purpose of hibernation, is not clear. It is very clear, however, that they do not go into hibernation in May, a time when their occurrence in dwellings is of equally common occurrence. Furthermore, our notes show that complaints of these mites entering dwellings almost invariably come from the eastern and cooler sections of the country, the reports from McCook, Nebr., and Denver, Colo., being the only exceptions in the West. Mr. George P. Weldon, who studied the species in Colorado,<sup>1</sup> states that it winters there principally in the egg stage and that practically no living mites can be found abroad after August 1. Hatching begins about May 1, and there are probably three generations annually in that region.

#### REMEDIAL AND PREVENTIVE MEASURES.

Tobacco preparations applied in the form of a liquid spray are quite effective in destroying the mite, but do not destroy the egg, and therefore offer only temporary relief. Mr. Weldon found that flowers of sulphur dusted on foliage during early morning was more effective in destroying the mites. A liquid spray of 1 pound flowers of sulphur mixed in 4 gallons of weak soapsuds, 1 pound of soap to 100 gallons of water, was very effective and appeared to be lasting in its effects. This last can be easily applied to lawns and grounds where the mites are at work and also in fields of clover or alfalfa in case the depredations are confined to small spots or areas. The eggs can be destroyed on the trunks of trees by the use of strong kerosene emulsion. The writer has received reports of good results in driving the mites away from dwellings by placing oil of pennyroyal in small shallow dishes in the rooms where the mites occur. This measure does away with the disagreeable feature of fumigation with fumes of sulphur or dusting with insect powder, and the odor of the oil is not disagreeable to people using the rooms.

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<sup>1</sup> Loc. cit., p. 3, October, 1909.

## NATURAL ENEMIES.

The insect enemies of this mite, so far as recorded, are very few.

October 28, 1889, Mr. Pergande reared one of the common clothes moths (*Tineola biselliella* Hübner.) from small caterpillars that he had observed to feed upon the eggs.

Mr. Weldon<sup>1</sup> gives as enemies of the red spider (*Tetranychus bimaculatus* Harv.) a minute black lady-beetle, *Scymnus punctum* Lec. (fig. 3) and lace-winged flies. As there are many species of

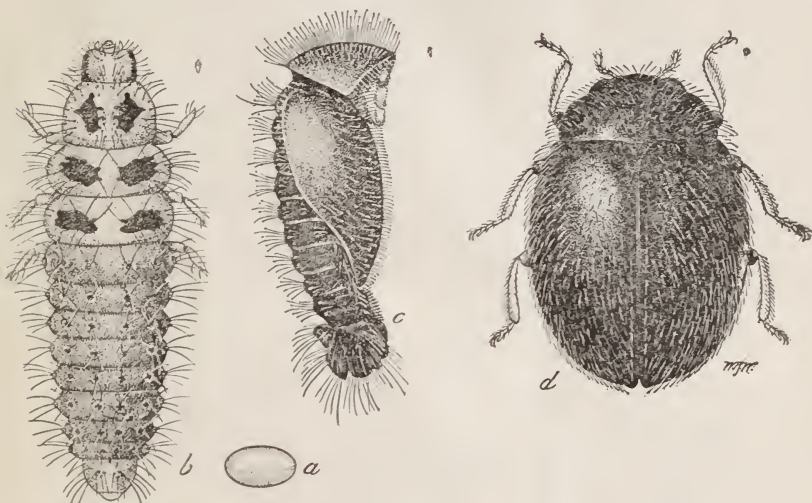


FIG. 3.—*Scymnus punctum*, a lady-beetle enemy of the clover mite: a, Egg; b, larva; c, pupa; d, adult. All much enlarged. a, b, c, Redrawn from Weldon; d, original.

the *Scymnus* and of lace-winged flies, it is not at all unlikely that some of them prey upon the clover mite.

Approved:

JAMES WILSON,  
Secretary of Agriculture.

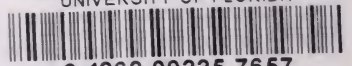
WASHINGTON, D. C., April 18, 1912.

<sup>1</sup> Loc. cit., p. 12.

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